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PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

Makoto SANO et al.

On Appeal from Group: 2176

Application No.:   09/215,555

Filed: December 18, 1998

Docket No.:   102382

For: IMAGE PROCESSING APPARATUS, OUTPUT APPARATUS, IMAGE PROCESSING
SYSTEM AND IMAGE PROCESSING METHOD

APPEAL BRIEF TRANSMITTAL

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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SYSTEM AND IMAGE PROCESSING METHOD

BRIEF ON APPEAL

Appeal from Group 2176

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I. INTRODUCTION

This is an Appeal from a Final Office Action mailed July 16, 2003 finally rejecting claims 1-11 and 13-16. No claims are allowed.

A. Real Party In Interest

The real party in interest is Fuji Xerox Co., Ltd., by way of an Assignment recorded at Reel 09665, Frame 0380.

B. Statement of Related Appeals and Interferences

There are presently no appeals or interferences, known to Appellants, Appellants' representative or the Assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

C. Status of Claims

Claims 1-11 and 13-16 are pending. Claims 1-11 and 13-16 stand finally rejected and are on appeal.

D. Status of Amendments

A first amendment was filed on June 3, 2002 in which claims 1, 2, 12, 14 and 15 was amended. A second amendment, filed November 8, 2002, replaced claims 1, 14 and 15. A third amendment, filed April 23, 2003, canceled claim 12 and amended claims 1 and 13-16. There are no amendments filed after the July 16, 2003 Final Rejection.

II. SUMMARY OF THE INVENTION

The invention relates to an image processing system and method including an image processing apparatus and an output apparatus for performing a banding process of objects so that an image is directly drawn on a band buffer without a necessity of generating an intermediate language.

The image processing apparatus includes reconstructing means for dividing, in band units, print data that indicates contents of objects positioned in one page which is composed of a plurality of the bands and reconstructing print data in the band units, converting means

for converting the data reconstructed by the reconstructing means into page description language data that is in a page description language form, and transmitting means for transmitting the page description language data, wherein the reconstructing means processes and distinguishes print data according to a type of the print data, and decides whether the band units to be reconstructed have common data.

The output apparatus includes receiving means for receiving the page description language data, raster converting means for converting the page description language data received by the receiving means into raster data, a buffer for storing, in the band units, the raster data converted by the raster converting means, and a printing mechanism for printing the objects on a printing sheet in accordance with the raster data read from the buffer, wherein the raster converting means processes the page description language data according to a type of command indicated by the page description language data, and the raster converting means clips the raster data which allows the overflow of the band units to supply the raster data to the buffer.

Referring, for example, to Fig. 2, the image processing system includes an application 100 in the host computer 1 to generate print data PD for each page. The print data PD is generated in object units for which print data PD is not always generated in the order of scanning the pages. That is, print data PD is generated in the order of describing the objects positioned at arbitrary positions in one page. The print data PD is then transferred to a graphic library 110 which reconstructs print data PD in band units so as to transmit print data PD to the printer driver 130. Because print data PD is generated in the order of describing the objects, transference of print data for one page to the printer driver is inhibited if generation of print data PD for one page is not completed. Thus, the graphic library stores print data PD in a metafile 120. Then, the printer driver converts print data PD reconstructed in band units into PDL data PD' so as to transmit PDL data PD' to the output apparatus 2. A

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decomposer 140 of the output apparatus interprets PDL data PD' supplied from the host computer 1 by an interpreter. The interpreter signals a processing module corresponding to the type of command indicated with the PDL data PD'. Specifically, when data is graphic data indicating lines or graphics, a graphic processing module is called. When data is image data indicating a photograph or the like, an image processing module is called. When data is text data, a text processing module is called. An imager for converting PDL data PD' into raster data RD is composed of the above-mentioned processing modules. The foregoing modules generate raster data RD.

This arrangement allows the image processing system to reduce the capacity memory of the output buffer and improve print quality of the printer.

Referring, for example, to Fig. 6, the printer driver 130 performs a banding process that divides the objects. The dividing process is performed by a text dividing module 131, an image dividing module 132, a graphics dividing module 133 and a PDL converting module 134. The dividing modules 131 to 133 are selected to be adapted according to a type of print data PD (as described in page 19, line 5 - page 23, line 3). The PDL converting module 134 converts data transmitted from the dividing modules 131 to 133 into PDL data PD'.

This arrangement allows the printer driver in the host computer to perform the banding process while simultaneously performing the process for dividing the objects.

III.   THE ISSUES ON APPEAL

A.   Whether the Office Action's rejection of claims 1-6, 8-10 and 16 under 35 U.S.C. §103(a) over U.S. Patent 5,588,095 to Dennis et al. is in error.

B.   Whether the Office Action's rejection of claim 7 under 35 U.S.C. §103(a) over Dennis et al. in view of U.S. Patent 5,859,956 to Sugiyama et al. is in error.

C.   Whether the Office Action's rejection of claims 11-15 under 35 U.S.C. §103(a) over Dennis et al. in view of U.S. Patent 5,805,174 to Ramchandran is in error.

IV. GROUPING THE CLAIMS ON APPEAL

Each claim of the patent application is separately patentable, and upon issuance of a patent, will be entitled to a separate presumption of validity under 35 U.S.C. §282. For convenience and handling of this appeal, the claims are grouped as follows:

Group I: Claims 1-11 and 16;

Group II: Claim 13;

Group III: Claim 14; and

Group IV: Claim 15.

The Groups do not fall together.

Claims 1-11 and 16 are patentably distinct from claim 13 because claim 13 recites an output apparatus, which includes an additional feature of the raster converting means.

Claims 1-11 and 16 are patentably distinct from claim 14 because claim 14 recites an image processing system, which includes an image processing apparatus and an output apparatus. Further, because claim 14 includes all the features of claim 1, the claim of Group II is patentable for all of the reasons set forth for the Group I claims.

Claims 1-11 and 16 are patentably distinct from claim 15 because claims 1-11 and 16 recite a different statutory category of invention than does claim 15.

Claim 13 is patentably distinct from claim 14 because claim 14 recites an image processing system, which includes an image processing apparatus and an output apparatus.

Claim 13 is patentably distinct from claim 15 because claim 13 recites a different statutory category of invention than does claim 15.

Claim 14 is patentably distinct from claim 15 because claim 13 recites a different statutory category of invention than does claim 15.

V.   ARGUMENT

A.   Summary of Relevant Law

In rejecting claims under 35 U.S.C. § 103, it is incumbent on the examiner to establish a factual basis to support the legal conclusion of obviousness. In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corgi, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

The mere fact that the prior art may be modified in the manner suggested by the examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). Further, the mere fact that parts of prior art disclosures can be combined does not make the combination obvious unless the prior art also contains something to suggest the desirability of the combination. In re Imperato, 486 F.2d 585 (CCPA 1973). To establish prima facie obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Rovka, 490 F.2d 981, 180

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USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

The Office Action must provide proper motivation to combine the teaching of different references. The first requirement of proper motivation is that a showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This evidence may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996). However, the suggestion more often comes from the teachings of the pertinent references. See In re Rouffet, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459(Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." See Dembiczak, 175 F.3d at 1000, 50 USPQ2d at 1617.

Further, analyzing the claimed invention as a whole in view of the prior art as a whole, one indicium of nonobviousness is a "teaching away" from the claimed invention by the prior art at the time the invention was made. See U.S. v. Adams, 148 USPQ 479 (1966). Essentially, teaching away from a claimed invention is a per se demonstration of lack of prima facie obviousness.

Where the prior art provides "only general guidance and is not specific as to the particular form of the invention or how to achieve it, [such a suggestion] may make an approach 'obvious to try,' but it does not make the invention obvious." Ex parte Obukowicz,

27 USPQ2d, 1063, 1065 (U.S. Patent and Trademark Office Board of Appeals and

Interferences, 1992) and In re O'Farrell, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

Moreover, a factual inquiry whether to modify a reference must be based on objective

evidence of record, not merely conclusionary statements of the Examiner. See, In re Lee, 277

F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

If the PTO fails to meet this burden, then the applicant is entitled to a patent. In re

Glaug, 62 USPQ2d 1151 (Fed. Cir. 2002). In the present case, and as will be detailed below,

Appellants respectfully submit that the Examiner has failed to meet this burden, and that the

Office Action violates the substantive and procedural due process which tile Office is

supposed to accord Applicants via the Administrative Procedures Act. See in this regard,

Dickinson v. Zurko, 527 U.S. 150,, 50 USPQ2d 1930 (1999), and In re Gartside, 203 F.3d

1305, 1316, 53 USPQ2d 1769, 1776 (Fed. Cir. 2000).

B.   Claims 1-6, 8-10 and 16 are not obvious in view of Dennis et al.

Claims 1-6, 8-10, and 16 stand rejected under 35 U.S.C. §103(a) over U.S. Patent

5,588,095 to Dennis et al. This rejection is respectfully traversed.

Firstly, Dennis et al. fails to disclose or suggest the positively recited feature of claims

1 and 16, particularly the converting means for converting the data reconstructed by the

reconstructing means into page description language data that is in a page description

language form.

Instead, Dennis et al. discloses that the data that is to be printed is stored within the

host computer system in a page description language (PDL) format (see col. 3, lines 42-45).

That is, Dennis et al. discloses that the print data is already in the PDL format in the host

computer system, whereas the present claimed invention recites converting the reconstructed

data into page description language data in the image processing apparatus.

Secondly, Dennis et al. fails to disclose or suggest the reconstructing means decides whether the band units to be reconstructed have common data, as recited in claim 1.

The Office Action, on page 3, states "it would have been obvious to one of ordinary skill in the art at the time of the invention to select a predetermined method of reconstruction since it was common at the time for print data to consist of various types of data such as text and graphic objects as taught by Dennis." However, it is respectfully submitted that no objective evidence supports this unsupported conclusion. See, in this regard, In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

Moreover, on page 9, the Office Action states that "Dennis suggests taking into consideration "overlapping" objects. In reference to Fig. 3, Dennis teaches transmitting a list of bandable primitives for the entire page. Objects that cross band boundaries are divided at the band boundaries. The objects are taken in the order they are created and overlapping objects are defined by previous objects." However, it is respectfully submitted that although Dennis et al. discloses converting the "overlapping" objects, it never takes into consideration the band units with common data, as described in the present claimed invention. In fact, Dennis et al. specifically teaches away from the claimed invention because Dennis et al. discloses "... create bit-map data for first object 108 ... and ignore all data that falls outside band 102" (emphasis added) (see col. 5, lines 27-39). That is, Dennis et al. discloses the metafile creates a bit-map data for the first object within the first horizontal band 102 and disregards any data that does not fall within the first band, creates another bit-map data for the second object within a second horizontal band 104, and so forth. However, the created bit-map data in Dennis et al. is generated from the stored metafile, and does not disclose or mention reconstructing the band units with common data. Further, Dennis et al. also discloses "... band divider of the present invention divides the first object 108 into object 108a ... within the band 102 ..." (see col. 6, lines 10-14). Thus, Dennis et al. clearly shows

that Dennis et al. never takes the band units with common data into consideration. Therefore, Dennis et al. fails to disclose or suggest the reconstruction means which decides whether the band units have common data. Thus, the Examiner relied on a broad statement of obviousness without citing or showing any reference that discloses or suggests the specific feature of the reconstructing means.

Further, the Office Action asserts that it would have been obvious to modify Dennis et al. to come up with the features of the claimed invention. In particular, on page 3, the Office Action states that "it would have been obvious to one of ordinary skill in the art at the time to incorporate a reconstructing, converting, and transmitting means in regards to print data since it was well-known in the art to convert page data into a PDL format and transmit it to the printer." However, the mere fact that a reference can be modified does not make the resulting modification obvious unless the prior art also suggests the desirability of the modification. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Accordingly, Dennis et al. does not disclose or suggest having the reconstructing means or the desirability of the present invention.

Further, the Office Action's assertion that one of ordinary skill in the art would have known to incorporate a reconstructing, converting, and transmitting means in regards to print data does not satisfy the Examiner's burden of proving obviousness. The mere fact that the claimed invention is within the capability of one of ordinary skill in the art is not sufficient, by itself, to establish prima facie obviousness. Accordingly, the mere assertion by the Examiner that one skilled in the art could have incorporated reconstructing, converting, and transmitting means because it was well-known in the art to convert page data into a PDL format and transmit it to the printer, is insufficient to base an obviousness rejection under 35 U.S.C. §103(a).

Third, Dennis et al. fails to disclose or suggest the reconstructing means processes and distinguishes print data according to a type of the print data, as recited in claims 1 and 16.

Dennis et al. only discloses processing the metafile and converting all print objects into bandable primitives for the entire page. That is, Dennis et al. discloses a band generator 52 that converts each band of the banded primitives data file into a single bit-map data file for the particular band being processed (see col. 4, lines 37-44). However, Dennis et al. fails to disclose or suggest that the band generator processes and <u>distinguishes</u> the print data according to the type of print data.

The Office Action states that Dennis et al. does discloses distinguishing print data according to the type of print data because different shapes and graphical objects require different reconstruction means. However, Appellants respectfully submit that the process in Dennis et al. is not the same process as the present invention. For example, referring to Fig. 6, the present invention requires dividing modules (text, image, and graphics) that determine and distinguish between the type of print data to be divided. Accordingly, Dennis et al. discloses processing the metafile and converting <u>all</u> print objects, including different shapes and graphical objects into bandable print images for the <u>entire</u> page, rather than processing and distinguishing the print data according to a type of print data.

Thus, contrary to the assertions made in the Office Action, Dennis et al. does not disclose the aforementioned positively recited features of claims 1 and 16. Accordingly, claims 1-6, 8-10, and 16 are patentable over the applied reference.

C.   Claim 7 is not obvious in view of Dennis et al. and Sugiyama et al.

Claim 7 stand rejected under 35 U.S.C. §103(a) over Dennis et al. in view of U.S. Patent 5,859,956 to Sugiyama et al. This rejection is respectfully traversed.

The Office Action relies upon Sugiyama et al. for teaching the reconstruction means divides image data such that divided objects overlap one another when the objects across the

plural bands are divided for each band. However, Sugiyama et al. also does not disclose or suggest the reconstructing means that processes and distinguishes print data according to a type of the print data, and decides whether the band units to be reconstructed have common data. The reconstruction means of Sugiyama et al., which is briefly described at col. 8, lines 12-30, col. 8, lines 56-65, col. 12, lines 6-28, col. 14, lines 37-40, and col. 34, lines 26-6 , is not described as having such features of the reconstruction means of the present invention.

Accordingly, claim 7 is also patentable over the applied references.

D.   Claims 11-15 are not obvious in view of Dennis et al. and Ramchandran et al.

Claims 11-15 stand rejected under 35 U.S.C. §103(a) over Dennis et al. in view of U.S. Patent 5,805,174 to Ramchandran et al. This rejection is respectfully traversed.

For the reasons discussed above, Dennis et al and Ramchandran et al., individually or in combination, fail to disclose or suggest the reconstructing means possessing and distinguishes print data according to a type of the print data, as recited in claims 14 and 15.

With regards to independent claim 13, Dennis et al and Ramchandran et al., individually or in combination, fail to disclose or suggest the raster converting means clips the raster data which allows the overflow of the band units to supply the raster data to the buffer.

Claim 13 is directed to an output apparatus that corresponds to the image device of claims 6 and 7 for processing data in a host server. Specifically, claim 6 is directed to when a character indicated by a character code is positioned across a plurality of band units, which is the same character code sent with the plurality of band units, respectively. That is, the same character code is transmitted repeatedly. Thus, the purpose of this processing is to transmit the character code to an output apparatus just as it is, preventing raster development of the character code in the host. Claim 7 is directed to when an image is positioned across a plurality of band units, which the image is divided into plurality of band units in such a

manner that the band unit data includes data of portions to be printed in another band unit. The divided data is transmitted in the form of PDL data. That is, the image data of the respective band units is transmitted while overlapping with each other. The output apparatus performs an image processing, such as an interpolation with regard to the respective band unit, taking pixel data in the surrounding regions of the band unit data as references. Accordingly, there occurs a problem in which, when image data just fitted with the band unit is transmitted to the output apparatus as band unit data, the output apparatus cannot perform proper interpolation processing at boundary regions of the band unit. Thus, the present invention takes into consideration of this problem. —— — —

Hence, claim 13 relates to data transmission in an output apparatus when image data is divided into band units. The data transmission is operated so that data of a band unit is sent with attached data, which will not be printed in the band unit, but the data transmission is to clip the data to be printed in another band unit.

However, Ramchandran et al. specifically teaches away from the present invention because the present invention, as described on page 14, lines 1-16 discloses that the banding process in the image processing system is performed by the host computer so that the necessity for the output apparatus to generate intermediate format data can be eliminated. Accordingly, the memory for storing compressed image data until the raster development is performed after the banding process has been completed can be omitted. Because the process for compressing and expanding image data can be omitted, a high-quality image can be obtained. Ramchandran et al., on the other hand, discloses that the image data must be compressed and stored until the raster development is performed after the banding process has been completed (see col. 6, lines 40-47).

Further, the Office Action, on page 8, asserts that one of ordinary skill in the art would have combined Ramchandran's method of rasterizing print data with Dennis's method

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and apparatus for receiving and converting print data into PDL data since both Dennis and Ramchandran are of related technologies in image processing. However, the mere fact that both references are of related technologies are not sufficient, by itself, to establish <u>prima facie</u> obviousness. Accordingly, the mere assertion by the Examiner that one skilled in the art could have combined Dennis et al. and Ramchandran et al. because they are related technologies, is insufficient to base an obviousness rejection under 35 U.S.C. §103(a). This "motivation" is not clear and particular. Rather, it is a broad conclusory statement about the teaching of multiple references, and is not "evidence." Moreover, this motivation does not show that combination of these two references is desirable, which is required to serve as proper motivation to combine these two references. Thus, the Office Action has failed to make a <u>prima facie</u> case for obviousness of this claim, and should be allowed.

Accordingly, claims 11-15 are also patentable over the applied references.

For the aforementioned reasons, Appellants respectfully submit that claims 1-11 and 13-16 are not rendered obvious by either Dennis et al., Sugiyama et al., and Ramchandran et al., alone or in combination. Therefore, the rejection of claims 1-11 and 13-16 under 35 USC §103(a) over the applied references is improper.

VI. CONCLUSION

The Office Action has not made out a prima facie case of obviousness of the claimed invention for the reasons stated above, and the rejection of claims 1-11 and 13-16 should be reversed.

The Honorable Board is requested to reverse the rejections set forth in the Final

Rejection and to pass this application to issuance.

Respectfully submitted,

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Appendix

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APPENDIX

CLAIMS:

1. An image processing apparatus, comprising:

reconstructing means for reconstructing print data for instructing contents of objects positioned in one page in band units that are obtained by dividing the page into a plurality of regions;

converting means for converting the data reconstructed by said reconstructing means into page description language data that is in a page description language form; and

transmitting means for transmitting the page description language data,

wherein the reconstructing means processes and distinguishes print data according to a type of the print data, and decides whether the band units to be reconstructed have common data.

2. The image processing apparatus according to claim 1, wherein said reconstructing means includes:

storage means for storing print data for one page; and

a graphic library for generating data reconstructed in the band units by retrieving the contents stored in said storage means,

wherein said converging means is a printer driver for converting data supplied in the band units from said graphic library into the page description language data.

3. The image processing apparatus according to claim 1, wherein said reconstructing means and said converting means include:

a printer driver; and

storage means, and said printer driver stores print data supplied from said graphics library in said storage means, and retrieves said storage means after print data for

one page has been stored in said storage means so that data reconstructed in the band units is read from said storage means, and read data is converted into the PDL data.

4.   The image processing apparatus according to claim 1, wherein

said reconstructing means divides said objects across plural bands in band units to generate data reconstructed in the band units.

5.   The image processing apparatus according to claim 4, wherein

said reconstructing means divides bit map data at boundaries among the bands, when the objects across plural bands are divided for each band in a case where print data is bit map data.

6.   The image processing apparatus according to claim 4, wherein

said reconstructing means transmits text data for each of corresponding bands, when the objects across the plural bands are divided for each band in a case where print data is text data which instructs a character code.

7.   The image processing apparatus according to claim 4, wherein

said reconstructing means divides image data such that divided objects overlap one another, when the objects across the plural bands are divided for each band in a case where print data is image data.

8.   The image processing apparatus according to claim 4, wherein

said reconstructing means divides the objects into draw primitives, and handles sets of the draw primitives belonging to the bands as objects for each band so that the objects across the plural bands are divided for each band.

9.   The image processing apparatus according to claim 4, wherein

said reconstructing means makes approximation to curves with a plurality of straight lines, when print data is graphics data indicating the curves so as to divide the curves across the plural bands for each band.

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10.   The image processing apparatus according to claim 1, wherein said reconstructing means includes:

detecting means for detecting processing performance of said image processing apparatus; and

determining means for determining whether or not print data is reconstructed, and wherein print data is transmitted to said converting means, when said determining means has determined that reconstruction is not performed.

11.   The image processing apparatus according to claim 1, wherein

said band is obtained by dividing a page in a main scanning direction and a sub-scanning direction.

13.   An output apparatus having a structure in a page description language that corresponds to each object that is supplied in band units and obtained by dividing one page into a plurality of regions, comprising:

receiving means for receiving the page description language data;

raster converting means for converting the page description language data received by said receiving means into raster data;

a buffer for storing, in band units, the raster data converted by said raster converting means; and

a printing mechanism for printing the objects on a printing sheet in accordance with the raster data read from said buffer,

wherein the raster converting means processes the page description language data according to a type of command indicated by the page description language data, and the raster converting means clips the raster data which allows the overflow of the band units to supply the raster data to said buffer.

14.   An image processing system, comprising:

an image processing apparatus including:

reconstructing means for dividing, in band units, print data that indicates contents of objects positioned in one page which is composed of a plurality of the bands and reconstructing print data in the band units,

converting means for converting the data reconstructed by said reconstructing means into page description language data that is in a page description language form, and

transmitting means for transmitting the page description language data,

wherein the reconstructing means processes and distinguishes print data according to a type of the print data, and decides whether the band units to be reconstructed have common data; and

an output apparatus including:

receiving means for receiving the page description language data,

raster converting means for converting the page description language data received by said receiving means into raster data,

a buffer for storing, in the band units, the raster data converted by said raster converting means, and

a printing mechanism for printing the objects on a printing sheet in accordance with the raster data read from said buffer.

15.   An image processing method for an image processing system including an image processing apparatus and an output apparatus, comprising:

dividing, in band units, print data that indicates contents of objects positioned in one page which is composed of a plurality of the bands;

reconstructing the print data in the band units and distinguishing according to

a type of the print data, and deciding whether the band units to be reconstructed have

common data;

converting reconstructed data into page description language data in a page

description language form;

converting the page description language data into raster data;

storing, in the band units, the converted raster data; and

printing the objects on a printing sheet in accordance with the stored raster

data.

16.   An image processing apparatus, comprising:

reconstructing means for reconstructing print data for instructing contents of

objects positioned in one page in band units that are obtained by dividing the page into a

plurality of regions;

converting means for converting the data reconstructed by said reconstructing

means into page description language that is in a page description language form; and

transmitting means for transmitting the page description language data;

wherein the reconstructing means processes and distinguishes print data

according to a type of print data and determines whether the objects are positioned across a

plurality of the band units.